Testimony of

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on behalf of

Rural Cellular Association

before the

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Committee on Homeland Security
Subcommittee on Emergency Communications, Preparedness and Response

regarding

Interoperable Emergency Communications: Does the National Broadband Plan Meet the Needs of First Responders?

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Chairman Thompson, Chairwoman Richardson, Ranking Member King, Ranking Member Rogers and members of the Subcommittee, thank you for the opportunity to be here today. My name is Eric Graham, and I am Vice President for Strategic and Government Relations for Cellular South, Inc. Cellular South is the nation's largest privately-held wireless carrier by number of subscribers, providing service in all of Mississippi as well as portions of Tennessee, Alabama and Florida.

I testify today as a member of the Rural Cellular Association (RCA). RCA's nearly 90 carrier members provide wireless service in regional, remote, and hard-to-reach areas, with collective FCC licenses covering over 80% of the nation's geography. RCA members are community-oriented, community-based, and supportive of those that protect our communities.

Cellular South is a typical RCA member in that the area we serve is overwhelmingly rural. Our participation in the federal universal service program has enabled us to build out high-quality mobile wireless services to most of the area where we are licensed to serve. Additionally, we have deployed high-speed data services to large portions of our service area. In many of these areas, national carriers have not constructed networks of comparable reach and quality.

In addition to building out a commercial mobile wireless network, our company is a strong supporter of public safety and emergency responders. For example, we received a special commendation from the Mississippi state legislature for our outstanding work in restoring service to the Gulf Coast following Hurricane Katrina. Even at the height of the storm, our network never completely went down and our entire network was fully restored within 11 days after the storm made landfall. Furthermore, the state of

Mississippi has awarded Cellular South the state contract for wireless services, which is additional proof of our coverage and service quality.

Other RCA members support public safety in similar ways. Some offer discounted service, discounted and donated equipment such as handsets and air cards, and free technical support, enabling rural public safety officers to reap the benefits of mobile high-speed data services today and to serve our communities.

I appreciate the opportunity to be here today, and to offer testimony addressing the realities of network operation and build out, the unique benefits of partnering with regional and rural commercial providers, and the need for interoperability across the entire 700 MHz band to maximize public safety's communications capabilities. Cellular South and the RCA share the goal of ensuring that public safety enjoys the benefits of new technologies and choice, while driving their costs down to commercial rates. As currently contemplated, the partnership between public safety and commercial carriers will mean better services, greater spectrum efficiency, and interoperability across multiple networks which will allow public safety to focus its resources on saving lives.

In considering mobile high-speed data networks, there are three critical elements to successful deployment and operation. First, a service provider needs spectrum with the appropriate characteristics and capacity, such as 700 MHz spectrum. Next a service provider must have sufficient funding to construct a network with ample coverage and capacity to make it useful for users. Finally, and most important, a service provider must have access to interoperable equipment, and devices must be available so that users can access other networks that use the same technology. We believe that the FCC's National

Broadband Plan accurately identified these three critical elements, and the RCA supports its Public Safety recommendations.

Spectrum Availability

Radio waves in the 700 MHz spectrum band travel long distances and are able to pass through forests, walls, buildings, and other obstructions with greater ease than higher-frequency airwaves, such as spectrum above 1 GHz (i.e. 1000 MHz). These characteristics make the band well-suited for vast geographic coverage with fewer cell sites, and therefore, at a lower cost.

Because the D block and the existing 700 MHz public safety spectrum are adjacent to other 700 MHz spectrum being used by commercial carriers, they share the same propagation characteristics as the commercial 700 MHz spectrum. Therefore, it is technically feasible for carriers and public safety to use common towers and share other network facilities because the network designs for public safety and commercial networks can be the same. Network sharing on adjacent frequencies not only enhances public safety, but it also greatly improves efficiencies that will lower the cost of building and maintaining public safety networks.

Interoperability

The most critical factor to ensure the viability and success of a nationwide public safety network is interoperability. Unfortunately, without FCC or Congressional action, interoperability throughout the 700 MHz spectrum is unlikely to be achieved.

There are currently three major spectrum bands available for mobile high-speed data services (Cellular, AWS, and PCS) and a fourth (700 MHz) which will be available

as early as the end of this year. As wireless technologies have rapidly evolved, devices in each of the Cellular, AWS and PCS bands were built with the capability to operate on all frequencies within each band. This allows seamless roaming across the frequency bands on other networks that utilize the same technology.

In fact, when the FCC awarded the first cellular licenses in the 850 MHz band, the Commission included a requirement that all devices must work on all 850 MHz cellular networks. This was necessary because one block of spectrum was set aside for incumbent carriers in each market, and there was a concern that incumbents might have sufficient market power to demand equipment that would work on its licensed spectrum but not on the spectrum of its competitor.

Fast forward to 2010. Today, the largest carriers are developing devices that only work on certain portions of the 700 MHz band. This limits consumers' ability to seamlessly roam on otherwise compatible networks, and their ability to change providers. This also prohibits public safety users from taking advantage of these economies of scale to acquire reasonably-priced devices for their networks. The harm that the FCC sought to avoid almost 30 years ago is becoming a reality today.

While there are currently three different technologies used for wireless communications, CDMA, GSM, and iDEN, the emerging consensus from both public safety and commercial carriers is that 4G technologies deployed in the 700 MHz band will use Long Term Evolution (LTE) technology. The FCC in the National Broadband Plan recommended designating LTE as the standard for the public safety network, a recommendation supported by both Cellular South and RCA.

As we move into a 4G world, both public safety users and commercial users would greatly benefit from having access to an interoperable, technologically-compatible LTE network. First responders would have universal access to their own LTE network whenever and wherever an emergency may occur and, where the networks overlap, public safety users would have the ability to roam on commercial 700 MHz networks to provide additional capacity. In areas without a public safety network, emergency responders' devices would work in any place where any commercial carrier is providing coverage on 700 MHz spectrum.

Unless things change, interoperability on 700 MHz LTE networks will not be possible because the current 700 MHz Band Classes fragment the 700 MHz spectrum.[1] Additionally, the developing LTE device and equipment ecosystem is being designed to prevent interoperability and seamless roaming across all frequency blocks.

The plan currently being used for building out the 700 MHz consists of four bands:

- Band Class 12, which includes the lower A, B, and C blocks only
- Band Class 13, which includes the upper C block only
- Band Class 14, which includes the D block and the public safety broadband spectrum only
- Band Class 17, which includes the lower B and C blocks only

When the band classes are compared to the winners of the various blocks of spectrum in the 700 MHz band, the interoperability problems become clearer. With a nationwide license of the upper C block (less Alaska), Verizon Wireless is the sole carrier operating

[1] The 700 MHz Band Classes should not be confused with the 700 MHz Band Plan. The Band Classes are groupings of spectrum which are approved by an international standards body – in this case, the 3rd Generation Partnership Project (3GPP) – to facilitate development of network equipment and end-user devices.

within Band Class 13. AT&T holds the majority of licenses for the lower B and C blocks, therefore possessing the vast majority of Band Class 17. These carriers plan LTE deployments in the 700 MHz band as early as this fall, but the devices being developed for their networks do not include public safety's Band Class 14. As a result, public safety will not have the ability to be interoperable with these carriers' LTE networks.

For commercial carriers operating in Band Class 12, this means customers will not be able to roam on otherwise compatible networks when they are outside of built-out coverage of their specific spectrum block. That is wrong, and it is a disservice to all wireless consumers. But for public safety, this situation could be catastrophic.

For example, if a public safety 700 MHz facility is knocked off the air by a natural or man-made disaster, but a commercial 700 MHz network remains operational, public safety devices will not work on those commercial networks because of the balkanization of 700 MHz spectrum. Since LTE devices will bring unprecedented capabilities to first responders, this means they could lose their most effective communications tools in the very situations where they are needed the most. The inability for public safety users to access commercial 700 MHz networks is a preventable problem that can be solved by simply requiring all 700 MHz devices to work on technologically-compatible 700 MHz networks.

In addition, without required interoperability throughout all paired 700 MHz spectrum, neither public safety nor rural commercial carriers will be able to leverage the economies of scale necessary to secure equipment at competitive prices. If 700 MHz devices were required to be built to work across all paired spectrum, public safety users would have the opportunity to acquire devices something much closer to, if not equaling,

consumer prices.

As referenced in the FCC's technical paper on developing the public safety network, "This lack of scope is compounded if the public safety entity is operating on an LTE network that utilizes spectrum in a band class assigned exclusively for the public safety community. This would be the case if the D block was reallocated to public safety. In this situation, there would be no commercial service provider in LTE Band Class 14 in the 700 MHz band. While technically such a system could be deployed and supported, the costs of the network equipment, most notably the devices, would increase substantially."[2]

Requiring interoperability across all paired bands of 700 MHz spectrum is the only way to ensure a nationwide network for public safety. To build a public safety network, simply partnering with AT&T or Verizon will not provide public safety with the necessary coverage throughout the country, and rural communities will suffer. Even if public safety partnered with AT&T or Verizon, chipsets must be developed for the public safety network operating in Band Class 14. These chipsets must then be put in equipment that also has chipsets for either Band Class 13 or Band Class 17. Additionally, the public safety network will be limited to the speed and areas of deployment for the national carrier. And as many consumers with iconic devices have learned, national carriers do not always build their networks with sufficient capacity, let alone reliability.

If the LTE ecosystem is allowed to progress in a manner that prevents a partnership between the public safety network and rural carriers, the first responders in rural areas likely will not be able to utilize the nationwide broadband public safety

[2] Federal Communications Commission. "A Broadband Network Cost Model: A Basis for Public Funding Essential to Bringing Nationwide Interoperable Communications to America's First Responders," *OBI Technical Paper No. 2*. May 2010, 5.

network until the largest carriers deploy 4G LTE service in their areas and certainly will not be able to take advantage of rural carriers' excess capacity in times of emergency. Recent statements by national carriers support the broad consensus that these carriers will begin their 4G deployments by overlaying their current 3G service areas, and likely not deploy services in rural America until long in the future. Conversely, Cellular South, like other winners of 700 MHz lower A block spectrum, intends to deploy 4G LTE services in rural America as quickly as possible.

Indeed, Upper 700 MHz licensees have an incentive to focus on densely-populated areas at the expense of rural areas. When the various blocks of 700 MHz were auctioned, different build-out requirements were implemented with the different blocks. For example, the upper C block spectrum requires build-out within a specific time frame of certain population percentages, while the lower A block requires certain geographic percentages of build-out. Logically, a carrier needing to reach a higher percentage of the population will deploy services first in the most densely populated urban areas. It is virtually guaranteed that population based build out requirements will be satisfied long before the largest carriers' network deployment reaches the rural areas of the country. Lower A block licensees do not have this luxury, and beyond already catering more specifically to rural America, they are required to cover larger percentages of geography including remote and sparsely populated areas.

The recent mining tragedy in West Virginia made it clear that our nation's first responders require the ability to access cutting edge communications even in our nation's remote rural areas. Volunteer firefighters and sheriffs' departments in rural areas are typically at an equipment disadvantage when compared to their counterparts in

metropolitan areas. This does not have to be the case with next-generation public safety networks. If Congress or the FCC requires interoperability across the 700 MHz spectrum, the public safety network can have a build-out that is concurrent with commercial build-outs throughout the nation and all first responders will have access to a robust network with sufficient overflow capacity to cover any need.

Funding

The best way to fund a public safety network is a commercial auction of the D block. An auction, which the FCC can conduct quickly and efficiently, is the only proven means of maximizing the revenues needed to build a high-quality public safety network. The Congressional Budget Office (CBO) estimates that a D block auction would raise between $2 billion and $3 billion if auctioned to commercial carriers. The actual auction proceeds could be much higher. In the last 700 MHz auction (Auction 73) congressional estimates expected the auction to bring revenues of $10.182 billion, but the net winning bids actually totaled $18.96 billion.

Given the scarcity of available low-band spectrum (e.g., 700 MHz) for competitors of the "Big Two" it is entirely possible – if not likely – that current CBO estimates would be exceeded. A near-term auction would provide immediate capital to be used as a timely down payment on the deployment of the public safety network. As FCC Public Safety and Homeland Security Bureau Chief Admiral James Barnett, Jr. has previously testified, allocating the D block to public safety would not only "nearly destroy the commercial market for equipment and devices for public safety[,] isolating

public safety on a technological island the way they are today" but would also "vastly increase the cost of building the network for public safety by billions of dollars[3]."

In order to leverage the nationwide commercial build out of LTE at 700 MHz, public safety must be prepared to build-out the network at the same time as commercial carriers deploy service. Cellular South and RCA welcome the FCC's commitment to make an additional 500 MHz of spectrum available for mobile high-speed data services, and recognize that the auction of this additional spectrum may also be a significant source of funding for the public safety network. Despite the revenue generated from future auctions, if funding is not available for the public safety network at the time of commercial build out (which includes planned LTE coverage for 95% of the United States population by 2015[4]) we will lose a clear path to delivering a network for our nation's first responders. The FCC estimates that building a separate public safety network, including the 44,800 sites necessary for adequate coverage, would cost an additional $9.4 billion compared to leveraging an incentive-based partnership. Time is of the essence if the public safety network is to leverage a parallel commercial build out.

While the funding that would be provided from a commercial D block auction is needed immediately, the additional capacity of reallocating the D block to public safety is not only excessive today but unnecessary going forward. The claims that it is necessary to reallocate the D Block to public safety in order to meet capacity needs are based on the

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[3] Barnett, Jr., Admiral James Arden. Quote from: U.S. Congress. House Energy and Commerce Subcommittee on Communications, Technology and the Internet. "Legislative Hearing on a Discussion Draft to Provide Funding for the Construction and Maintenance of a Nationwide, Interoperable Public Safety Broadband Network and for Other Purposes and on H.R. 4829, the Next Generation 911 Preservation Act of 2010." (6/17/10), *available at* http://energycommerce.house.gov/documents/20100617/transcript.06.17.2010.cti.pdf, 47.

[4] *OBI Technical Paper No. 2,* 2.

outdated deployment practices of first and second generation technologies that are impractical for use with 4G technologies.

As the Coalition for 4G in America has pointed out, deploying a LTE public safety network using a low-site, cellular-like approach with the existing 2x5 MHz currently allocated to public safety would provide greater system capacity with half the amount of spectrum as compared to utilizing outdated high-site deployments on a potential 2x10 MHz of spectrum where the D block is reallocated to public safety.[5] Beyond being more spectrally efficient, the cellular-like deployment will provide more robust signal coverage and network redundancy while avoiding potential problems with issues such as interference. RCA believes the current allocation provides more than adequate capacity nationwide – and certainly in rural America.

Conclusion

Cellular South and RCA members strongly support both Congressional and FCC action to ensure the timely deployment of a robust nationwide interoperable wireless broadband public safety network. To leverage the advancements and deployments of commercial wireless carriers in 4G LTE technologies, the success of the public safety network depends on requiring interoperability throughout all paired 700 MHz spectrum. Congress and the FCC must take action to ensure interoperability in order to facilitate seamless roaming on 700 MHz networks and to significantly decrease the cost of public safety devices. RCA members continue to support an auction of the D block and dedication of the auction proceeds to building the public safety network.

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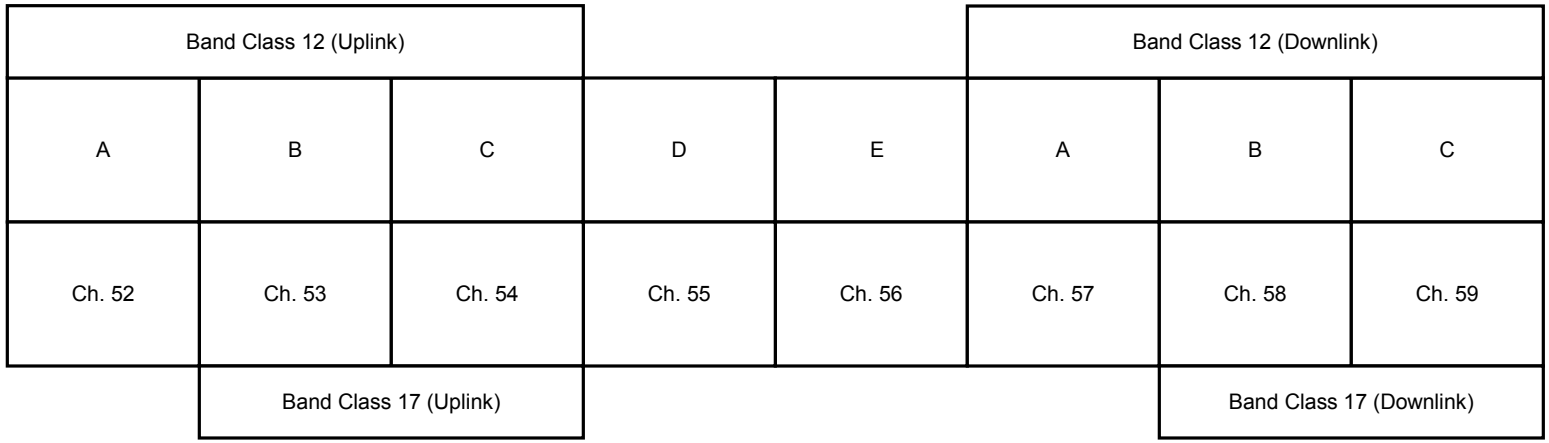
[5] Doug Hyslop & Chris Helzer, *Wireless Strategy 700 MHz Upper Band Analysis* (July 19, 2010), *available in* Coalition for 4G in America, Written Ex Parte Presentation, WT Docket No. 06-150; PS Docket No. 06-229; GN Docket No. 09-51 (July 19, 2010), *available at* http://fjallfoss.fcc.gov/ecfs/document/view?id=7020549812.

Thank you again for the opportunity to participate in today's hearing, and I welcome any questions.

700 MHz Lower Band Spectrum & Band Classes



700 MHz Upper Band Spectrum & Band Classes